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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/904,097	07/13/2001	Hiroshi Sumi	Q65445	1333

7590 01/02/2003

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EXAMINER

ALCALA, JOSE H

ART UNIT

PAPER NUMBER

2827

DATE MAILED: 01/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/904,097

Applicant(s)

SUMI ET AL.

Examiner

Jose H Alcala

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 October 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 1-12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 13-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 September 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Claims 1-12 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 7.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "300" has been used to designate both "an exposed area" and "an encapsulating material", in Figures 7 and 9. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: 3. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

4. The drawings are objected to because: figures are improperly crosshatched. All of the parts shown in the section, and only those parts, must be crosshatched. The crosshatching patterns should be selected from those shown on page 600-81 of the MPEP based on the material of the part. See also 37 CFR 1.84(h)(3) and MPEP

608.02. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 13-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 13, it is not clear regarding what are the structural elements of the final invention. There are several elements that are claimed, which exist only the stages of making the device, and not necessarily are present in the final product. For example: the curing agent in line 6. In addition it is further unclear, if the recitation: "an alkyl group containing 1 to 10 carbon atoms, a hydroxyalkyl group containing 1 to 10 carbon atoms or an alkyloxy group containing 1 to 10 carbon atoms", is merely reciting possible constituents in the imidazolic compound or if these are additional constituents of the paste.

Regarding Claim 16, it is not clear what is the structural limitation stated in the claim, therefore the claim is treated as being a product-by-process limitation.

Regarding Claim 20, it is not clear what structural limitation is added in this claim. The recitation: "board is a PGA type wiring board", is merely a label for the device, and not an actual structural limitations that distinguish from the parent claim.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

8. Claims 13-16,20 are rejected under 35 U.S.C. 102(e) as being anticipated by Miller et al. (US Patent No. 6,188,027). As best understood by the examiner:

Regarding Claim 13, Miller teaches a printed wiring board comprising: a substrate (reference number 10) having a conductor layer (metal plating of reference number 20); and a through hole (reference number 20) penetrating through the substrate, wherein the through hole is filled with a paste (reference number 30) to be subjected to curing; the paste comprises an epoxy resin (column 6, line 15), a curing agent (column 5, line 62) and a metal filler (column 6, line 18); the metal filler is a powder comprises a base metal; and the curing agent is an imidazolic compound.

Regarding Claim 14, Miller teaches that the paste further comprises an inorganic filler (column 6,19-21).

Regarding Claim 15, Miller teaches that the paste further comprises an ultrafine inorganic filler (column 6,19-21).

Regarding Claim 16, the limitation: "at least part of the surface of the conductor layer has been subjected to a treatment of imparting hydrophobicity so that the treated surface part has a contact angle against water of 90 degrees or higher" is a product by process limitation. If the product in the product-by-process claims are the same as or obvious from a product of the prior art, the claims are unpatentable even though the prior product was made by a different process. See *In re Thorpe*, 227 USPQ 964,966 (Fed.Cir 1985). A "product by process" claim is directed to the product per se, no matter how actually made, *In re Brown*, 173 USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Wertheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); *In re Marosi et al*, 218 USPQ 289; and particularly *In re Thorpe*, 227 USPQ 964, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Note that applicant has the burden of proof in such cases, as the above case law makes clear.

Regarding claim 20, Miller teaches that the multi-layer wiring board is a PGA type wiring board.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al. (US Patent No. 6,188,027). As best understood by the examiner:

Regarding Claim 17, Miller fails to explicitly teach that the treated surface part has a roughness: Rz of 0.3 to 20 μm . It is well known in the art to roughen surfaces in order to improve the adhesion between elements in a circuit board. It would have been obvious to one having ordinary skill in the art at the time of the invention was made to have a desired roughness to improve the adhesion between elements in a circuit board. In addition, it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). The limitation: "at least part of the conductor layer has been subjected to a roughing treatment" is a product by process limitation. See rejection of claim 16.

11. Claims 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al. (US Patent No. 6,188,027) in view of Urasaki et al. (US Patent No. 5,879,568). As best understood by the examiner:

Regarding claim 18, Miller fails to explicitly teach that the substrate comprises a core substrate having on at least one side thereof a build-up layer formed by alternately laminating an insulating layer and a conductor layer, and the through hole penetrates through both the core substrate and the build-up layer.

Urasaki teaches a printed circuit board comprises a core substrate (reference number 1) having on at least one side thereof a build-up layer (see figure 1B) formed by alternately laminating an insulating layer and a conductor layer, and the through hole (reference number 11) penetrates through both the core substrate and the build-up layer. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Miller and Urasaki in order to have a substrate comprising a core substrate having on at least one side thereof a build-up layer formed by alternately laminating an insulating layer and a conductor layer, and the through hole penetrates through both the core substrate and the build-up layer, thus improving the strength of the board.

Regarding claim 19, Miller fails to explicitly teach a build-up layer formed by alternately laminating an insulating layer and a conductor layer. Urasaki teaches a printed circuit board comprises a core substrate (reference number 1) having on at least one side thereof a build-up layer (see figure 1B) formed by alternately laminating an insulating layer and a conductor layer, and the through hole (reference number 11) penetrates through both the core substrate and the build-up layer. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Miller and Urasaki in order to have a substrate comprising teach a

build-up layer formed by alternately laminating an insulating layer and a conductor layer, thus improving the strength of the board.

Conclusion

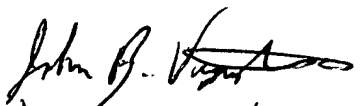
12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following references teach some of the embodiments of the instant claimed invention: Miller et al. (US Patent No. 6,188,027), Boyko et al. (US Patent No. 5,450,290) and Shirai et al. (US Patent No. 6,365,843).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jose H Alcala whose telephone number is (703) 305-9844. The examiner can normally be reached on Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Talbott can be reached on (703) 305-9883. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3431 for regular communications and (703) 305-3431 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

JHA
December 19, 2002


John B. Vignushin
Examiner
GA42827